

CLAIMS

1. A method for forming an internal gear in which a cylindrical raw material is externally inserted onto a forming die with an outer gear part formed thereon and fixed to said forming die, a forming roll is relatively moved in an axial direction of said forming die with respect to said raw material with said forming roll press-contacted with an outer peripheral surface of said raw material and relatively revolved about the axis of said forming die such that an inner peripheral surface of said raw material is pressed against said outer gear part of said forming die, thereby forming an internal gear part on the inner peripheral surface of said raw material,

wherein each tooth of said outer gear part of said forming die is formed in a helical tooth, an annular weir part having an inside diameter equal to or less than a tooth tip circle diameter of said internal gear part is formed on the inner peripheral surface of said raw material adjacent to a second end part of said outer gear part on a rear side in a moving direction of said forming roll, and said forming die is rotated such that a first end part of said outer gear part on a front side in the moving direction of said forming roll is moved ahead of the second end part of said outer gear part on the weir part side when said forming roll is fixed and said forming die is rotated.

2. A method for forming an internal gear according to claim 1, wherein a tooth tip circle diameter and a tooth bottom circle diameter of said outer gear part of said forming die are gradually reduced from one end side on the weir part side toward the other end side of said outer gear part, and the tooth thickness of said outer gear part is gradually reduced from one end side toward the other end side of said outer gear

part in correspondence with the tooth tip circle diameter and tooth bottom circle diameter.

3. A method for forming an internal gear according to claim 1, wherein an annular forming surface having a circular configuration in section about an axis of said forming die is formed at a place more offset toward the weir part side from said outer gear part on the outer peripheral surface of said forming die, and said forming roll is relatively revolved with respect to said forming die with said forming roll stopped at a location corresponding to the annular forming surface, so that the inner peripheral surface of said raw material is pressed against the annular forming surface, thereby forming an annular reference surface on the inner peripheral surface of said internal gear.

4. A method for forming an internal gear according to claim 3, wherein said forming roll is relatively revolved in the normal and reverse directions at the time said forming roll is relatively revolved with respect to said forming die with said forming roll stopped at a location corresponding to the annular forming surface.

5. A method for forming an internal gear according to claim 1, wherein said forming roll is separated in the radial direction from an outer peripheral surface of said cylindrical part before said forming roll is escaped from the outer peripheral surface of said raw material on the front side in the moving direction of said forming roll.

6. A method for forming an internal gear according to claim 5, wherein said forming roll is relatively revolved a plurality of times with said forming roll stopped at a location where said forming roll is

separated in the radial direction from the outer peripheral surface of said raw material.

7. An internal gear including a cylindrical part formed at an inner peripheral surface thereof with an internal gear part having a helical tooth part, and a bottom part formed on one end part of said cylindrical part,

wherein said internal gear part is formed on the inner peripheral surface of said internal gear and said annular reference surface is formed on the inner peripheral surface of said internal gear part between said bottom part and said internal gear part in accordance with the following forming methods A and B.

A. A method for forming an internal gear is employed in which a cylindrical raw material is externally inserted onto a forming die formed with an outer gear part and fixed thereto, a forming roll is relatively moved in the axial direction of said forming die with respect to said raw material with said forming roll press contacted with the outer peripheral surface of said raw material and relatively revolved about the axis of said forming die, so that the inner peripheral surface of said raw material is pressed against said outer gear part of said forming die, thereby forming an internal gear part on the inner peripheral surface of said raw material, each tooth of said outer gear part of said forming die is formed in a helical tooth, and an annular weir part having an inside diameter equal to or less than a tooth tip circle diameter of said internal gear part is formed on the inner peripheral surface of said raw material adjacent to a second end part of said outer gear part on a rear side in a moving direction of said forming roll, and said forming die is rotated such that a first end part

of said outer gear part on a front side in the moving direction of said forming roll is moved ahead of the second end part of said outer gear part on the weir part side when said forming roll is fixed and said forming die is rotated, thereby forming said internal gear part.

B. Said forming die is formed at a place more offset toward the weir part side from said outer gear part on the outer peripheral surface with an annular forming surface having a circular configuration in section about an axis of said forming die, and said forming roll is relatively revolved with respect to said forming die with said forming roll stopped at a location corresponding to the annular forming surface, so that the inner peripheral surface of said raw material is pressed against the annular forming surface, thereby forming an annular reference surface on the inner peripheral surface of said internal gear.